TITLE 327 WATER POLLUTION CONTROL BOARD

 # 01-238(WPCB)

SUMMARY/RESPONSE TO COMMENTS FROM THE SECOND COMMENT PERIOD

The Indiana Department of Environmental Management (IDEM) requested public comment from May 1, 2002, through June 3, 2002, on IDEM's draft rule language. IDEM received comments from the following parties:

Terry Merrell, Merrell Bros., Inc. (MBROS)
Colin E. Bullock, City of Huntington Water Pollution Control (HUN)
Angela B. Andrews, City of Lafayette Water Pollution Control Department (LAF)
Karl R. Kopec, Mishawaka Utilities (MIU)
David McCollum, Marion Utilities (MU)
Thomas J. Crawford, Milorganite Division, Milwaukee Metropolitan Sewerage District (MMSD)

Following is a summary of the comments received and IDEM's responses thereto.

Comment: The following are comments relating to the proposed development of Amendments to rules concerning the Land Application of Biosolid, Industrial Waste Product, And Pollutant-Bearing Water. First, I would like to commend the department on some positive proposed changes included in these amendments. I believe that the elimination of the seasonal high water table monitoring, broadening the agricultural lime substitute notification program to include liquid waste products, standard detection limits for seven heavy metals, clarification of nutrient monitoring requirements, recognition of pre-sampling for nutrients and clarification of storage structure requirements are all very good changes that serve to improve the safety and effectiveness for all land application programs in the State of Indiana. However, being in the business of Biosolids management, I have serious concerns regarding a few of the proposed changes in these amendments. While some of these concerns may be small in nature, I feel that they all will in some way potentially effect a large amount of permit holders financially as well as effecting their ability to run a land application program efficiently. I will attempt to address these concerns in detail and try to explain the effect each item will have to the end user. (MBROS)

Response: IDEM agrees that the rule changes improve the land application program in Indiana.

Comment: Concern # 1 Location: Indiana register, Volume 25, Number 8, May 1, 2002 page 2600 : 327 IAC 6.1-3-8 Responsibility of person who prepares and blends : Sec. 8. (a) (2) and (3).
The current wording in this section states that both (2) and (3) must apply. This means that biosolids or Industrial waste products accepted for blending must not only meet Class B under 327 IAC 6.1-4-13(c) prior to receiving but they must also meet these same requirements at the time of land application. I believe this requirement is excessive because it levies an extra financial burden on the receiving facility to pay for testing prior to receiving these products as well as having to run another test on the materials prior to land application. This extra burden could be eliminated if the department simply added the word "or" between lines (2) and (3). If the department was concerned about additional re-growth of pathogens once the material was received at the facility then this could be corrected by eliminating item (2) altogether. It appears that the goal of this regulation is to insure that the pathogens meet 327 IAC 6.1-4-13(c) before land application occurs so it should not be a concern as to the condition of the pathogens until the material is ready for land application. This is evident in the wording that immediately follows this section where it allows for a facility to receive material without knowing the status of the pathogens as long as it treats the material prior to land application. Both sections are trying to achieve the same result, which is in compliance with 327 IAC 6.1-4-13(c) prior to land application. Therefore, we feel it is an unnecessary burden to have to meet 327 IAC 6.1-4-13(c) prior to receiving the material and then have to turn around and meet the same regulation again prior to land application. (MBROS)

Response: IDEM agrees that it is unnecessary for both (2) and (3) to apply to liquid biosolid and a change was made to 327 IAC 6.1-3-8 to reflect this. However, IDEM does not believe that dewatered biosolid can be blended as thoroughly into a homogeneous mixture. Therefore, the draft standards requiring both (2) and (3) still apply to dewatered biosolid.

Comment: Concern # 2 Location: Indiana register, Volume 25, Number 8, May 1, 2002 page 2609 327 IAC 6.1-4-16 Monitoring and Analysis Sec. 16. (g).

The proposed Table 6 changes are a very good idea in this section. This will help eliminate confusion for permit holders not having to adhere to two sets of monitoring requirements between the Federal EPA 503 requirements and the State of Indiana requirements. The area of concern that I have is in section (g). This section allows for the permit holder to request for a reduction in frequency if certain criteria are met. While this requirement could have proven beneficial in the past, my concern is that any approved request would now put the permit holder in direct violation of the Federal EPA 503 rules. This is due to the fact that since Table 6 would now reflect the Federal frequency of monitoring requirements any reduction from this would violate the federal law. I believe that some permit holders might possibly receive a reduced frequency exemption from the state and not consider that this reduced frequency exemption will put them in direct violation with the Federal EPA 503 rules. I have tried to think this through and come up with a scenario where an exemption would not put the permit holder in direct violation of the Federal rules and I have not been able to think of any situation. If the department knows of a situation I would be very interested in knowing about it so that I can better understand this section. (MBROS)

Response: The rule cannot be less stringent than the federal rules. However, the federal rules allow for metals and pathogen reduction but not vector attraction reduction. The Indiana rule will reflect this.

Comment: Concern # 3 Location: Indiana register, Volume 25, Number 8, May 1, 2002 page 2605 327 IAC 6.1-4-9 Pollutant Limits Sec. 940.

This is in regards to Table 2 and Table 3 regarding more restrictive limits for molybdenum. Table 2 lists the Cumulative Loading Rate for molybdenum at 35 pounds per acre and Table 3 lists a ceiling concentration of 40 mg/kg on a dry weight basis. The proposed requirement for a cumulative loading rate is understood. However, what molybdenum value does a facility use for sites that have been used in the past? Does a facility start at zero for a cumulative value for every site now used? My concern is that IDEM may possibly estimate this value for each application site and not have an exact number. If this is true, estimating a cumulative loading value may be inaccurate and could cause a site to be prematurely abandoned based on an estimated number. This is especially true if these numbers were derived at from analysis that did not detect a molybdenum number low enough but yet it met Table one standards. This in turn could cause facilities additional expense by having to haul the biosolids further away to other land application sites. The proposed Table 3 limit for molybdenum at 40 mg/kg on a dry weight basis is the second concern. It appears IDEM is trying to enforce a regulatory metal concentration limit that is not enforced by the Federal EPA. Currently, the IDEM limit for molybdenum is 75 mg/kg for Table 1 and Table 3. This is also true for the Federal EPA. By requiring a more stringent ceiling concentration for molybdenum on Table 3, this will disqualify several facilities from utilizing non-specific sites as they have done for the past several years. We have compiled analytical data supporting the claim that a 40-mg/kg molybdenum number is too stringent and will affect many, many facilities. This documentation was attached. Molybdenum is a hard test to consistently get the same results from. In other words if you ran the same test twice on the same sample you probably won't get the same result. The differences that you would probably see would not be huge and maybe would only be a few mg/kg but when you are already dealing with low numbers to begin with a difference of 7-8 mg/kg could make a big difference. I have enclosed a copy of 25 analyses from 25 different facilities and then summarized these results as to the effects this proposed change would have. As you can see 56% of these facilities would currently be affected if the limit were left at 40 mg/kg. I realize that it is probably the intent of the department to try and reward or encourage facilities for producing a cleaner biosolid but it is my experience from talking to facilities that the reward for trying to get molybdenum within these limits will not be worth the effort and costs involved. Thus, I believe that this stringent limit will actually end up being more of a penalty to the facility instead of an incentive. If the proposed rule is adopted, any facility with a hybrid permit or non-site specific permit that exceeds the molybdenum number of 40 mg/kg will be forced to use only site-specific sites and will have their permit revoked hopefully replacing it with a site-specific permit. By eliminating the availability of these non-site specific sites, this will cause a major financial burden for the many facilities by:

- Having to reapply for a site-specific permit
- Reducing the number of acres readily available to a facility for land application, in turn causing the need to permit additional land
- Eliminating the quick availability of biosolids to additional farmers and their ground without going through the 4-6 month permitting process required for site-specific permits.

IDEM's goal in the past has been to promote the beneficial reuse of biosolids through land application. However, by adopting a rule more stringent than the Federal EPA will eliminate several facilities from utilizing their hybrid/non-site

specific permit and does not promote the "easy-to-use" hybrid/non-site specific permits. It is our recommendation to keep the molybdenum ceiling concentration value at least equivalent to the Federal EPA regulatory limit of 75 mg/kg. By doing this, it will allow for further study into the molybdenum debate and will eliminate any confusion between the Federal EPA and IDEM ceiling limits. If the department was concerned that the Federal EPA may impose limits in the future a clause could be added to include that. Another concern is that if the State of Indiana does impose a limit that does not match the future Federal limits, then there would be two sets of rules to follow. With the effort the department is making in trying to match the State rules with the Federal rules in the area of frequency of monitoring, it seems kind of reverse to make another rule that more than likely won't match the Federal rules. Since we are all subject to following the Federal rules anyway, it would appear less burdensome to preliminarily impose more restrictions on the facilities in Indiana only when the rest of the states may or may not have a limit imposed at all. We strongly urge the department to give this issue some very serious thought as to the possibility of removing this from the proposed amendments. (MBROS)

Response: The molybdenum requirements in Tables 2 and 4 have been deleted. The molybdenum requirement in Table 3 has been raised from 40 milligrams per kilogram to 75 milligrams per kilogram. It is also being added under the management practices that it is prohibited to apply biosolid or industrial waste product that contains more than 40 milligrams per kilogram of molybdenum to pasture. The proposed limits for molybdenum are based on a study, "A Modified Risk Assessment to Establish Molybdenum Standards for Land Application of Biosolids" by O'Connor, Brobst, Chaney, Kincaid, McDowell, Pierzynski, Rubin and Riper. However, rather than the more stringent limits first proposed in the rule, the limits now proposed are based on the concerns directly reflected in the study. The rule now restricts biosolid and industrial waste products containing higher levels of molybdenum on pasture and for marketing and distribution when applied to pasture.

Comment: Concern # 4 Location: Indiana register, Volume 25, Number 8, May 1, 2002 page 2613 : 327 IAC 6.1-6-3 Agricultural Lime substitute application: Sec. 3.
This area of the rule explains a very detailed method of determining application rates based on several factors. Table 9 of this formula however assumes that all material is being either injected or incorporated into the soil. What this area of the rule does not address is the surface application of liming material onto ground that will later be incorporated into the soil (pasture, etc.) or the surface application of material onto no-till ground. It would be helpful if a section were added that stated: If a agricultural lime substitute material is being applied to the surface of the ground and the material is going to be incorporated into the soil within 12 months then the depth at which the material is going to be incorporated into the soil can be used in the Table 9 formula when determining application rates. This statement would help clarify this area more clearly. The application of material onto no-till ground however creates a different set of issues. The main question raised under this situation is when a Liming material is added to the surface of the ground and is not incorporated into the soil how much of the soil does it affect and how quickly does it move down through the soil. To help answer this I researched a study that was performed by The University of Pennsylvania, which had to deal with the migration of lime through the soil. The attached chart displays the results of this study that I received from A & L Laboratories in Fort Wayne, Indiana. The outlines for this study where prefaced on the fact that 3 tons of lime were added every three years. Soil tests were then taken in 2 inch increments annually to determine the pH level effects in each section. The results showed that all three cross sections responded to the lime during the first twelve-month period. The pH levels then began to drop in all three areas the 2nd year until finally they responded again when the next application was applied the third year. It was interesting to note that while all three sections of the soil increased in soil pH the top layer still increased at a higher rate. However, it is also important to note that some of the lime did migrate down rather quickly and affect the soil as deep as 6 inches within the first year. Because of this, I feel that it would be beneficial to add a third column to Table 9 for surface application of material. The justification would be that even though the material is being surface applied it still affects the soil up to a depth of 6 inches. The Depth Factor (DF) for soil at 6 inches is currently .75. 1 believe a depth factor of .50 would be appropriate for material that was surface applied. This .50 factor is actually what is identified for 4 inches but I believe that since the soil from 2-6 inches did not respond as high as the soil on the surface that it might be more of a compromise to only allow a .50 Depth Factor(DF) to be used instead of .75. If the department felt like further safeguards were needed to implement this idea a clause could be added that stated that sites that received this type of material that had not been incorporated into the soil could not be used again until soil samples were taken in the top six inches of the soil which is where the Lime from previous applications should be. One of the main driving forces behind these requests for change is the fact that there are no-till farmers who are

excluded from receiving this product because the application rate is so low when a depth factor of .25 is used that the product cannot be applied at that low of a rate. Besides, the landowner is actually getting penalized because although the attached study shows' that the lime will migrate down into the soil 6 inches the landowner can only lime the top 2 inches.

Table 9 Depth Factor

Injected or Incorporated Surface Applied

Plowing Depth (inches) Depth Factor (DF) Depth Factor (DF)

2 .25

4 .50 .50

6 .75

8 1.00

10 1.25

12 1.50

(MBROS)

Response: IDEM agrees that surface application of agricultural lime substitute would likely impact the top four (4) inch layer of soil. As such, the two (2) inch plowing depth category as been eliminated from the table. The depth factor table used to calculated the adjusted lime rate has been modified to cover all plow depths clearly.

Comment: Concern # 5 Location: Indiana register, Volume 25, Number 8, May 1, 2002 page 2603 327 IAC 6.1-4-6 Site Restrictions Sec. 6.(Q)(3)

I think this section is a good idea to add to these amendments. This question has been asked over the last few years with different responses so a clarification is definitely necessary. I do however feel that 20 acres is a little overkill. Due to the lack of a set acreage amount, 25 acres has been widely used in our community ever since the rules were first established, I believe that switching back to 20 acres would add confusion as well as add additional testing costs in more soil tests being required per site. I researched this issue with A&L laboratories Agronomy handbook (see attached) and found that they recommend a maximum area of no more than 40 acres per composite. Smaller areas are suggested if the soil is not uniform throughout the field. Since A & L Labs recommends a maximum amount of 40 acres, I would like to suggest that this part of the amendments be changed from 20 acres to 25 acres. This change would still be well under the A & L recommendations of 40 acres. (MBROS)

Response: IDEM agrees with your arguments and has changed the requirement from twenty (20) acres to twenty-five (25).

Comment: 327 IAC 6, 1-4-9 Pollutant Limits Sec. 9.0 This is in regards to Table 2 and Table 3 regarding more restrictive limits for Molybdenum. Table 2 lists the Cumulative Loading Rate for Molybdenum at 35 pounds per acre and Table 3 lists a ceiling concentration of 40 mg/kg on a dry weight basis. The proposed requirement for a cumulative loading rate is understood. However, what Molybdenum value does a facility use for sites that have been used in the past? Does a facility start at zero for a cumulative value for every site now used? My concern is that IDEM may possibly estimate this value for each application site and not have an exact number. If this is true, estimating a cumulative loading value may be inaccurate and could cause a site to be prematurely abandoned based on an estimated number. Especially if these numbers were derived at from analysis that did not detect a Molybdenum number low enough but yet it met Table one standards. This in turn could cause our facility additional expense by having to haul the biosolids further away to other land application sites.

The proposed Table 3 limit for Molybdenum at 40 mg/kg on a dry weight basis is the second concern. It appears IDEM is trying to enforce a regulatory metal concentration limit that is not enforced by the Federal EPA. Currently, the IDEM limit for Molybdenum is 75 mg/kg for Table I **and** Table 3. This is also true for the Federal EPA. By requiring a more stringent ceiling concentration for Molybdenum on Table 3, this will disqualify our facility from utilizing non-specific sites as we have done for the past several years.

Molybdenum is a hard test to consistently get the same results from. In other words, if you ran the same test twice on the same sample you probably would not get the same result. The differences that you would probably see would not be huge and maybe would only be a few mg/kg, but when you are already dealing with low numbers to begin with, a difference of 7-8 mg/kg could make a big difference.

I realize that it is probably the intent of the department to try and reward or encourage our facility for producing a cleaner Biosolid. It is my experience from talking to other facilities that the reward for trying to get

Molybdenum within these limits will not be worth the effort and costs involved. Thus, I believe that this stringent limit will actually end up being more of a penalty to our facility instead of an incentive.

If the proposed rule is adopted, any facility with a hybrid permit or non-site specific permit that exceeds the Molybdenum number of 40 mg/kg will be forced to use only site-specific sites and will have their permit revoked, hopefully, replacing it with a site-specific permit. By eliminating the availability of these non-site specific sites, this will cause a major financial burden on our facility by:

Having to reapply for a site-specific permit.

Reducing the number of acres readily available to a facility for land application, in turn causing the need to permit additional land.

Eliminating the quick availability of biosolids to additional farmers and their ground without going through the 4-6 month permitting process required for site-specific permits.

IDEM's goal in the past has been to promote the beneficial reuse of biosolids through land application. However, by adopting a rule more stringent that the Federal EPA can eliminate our facility from utilizing their hybrid/non-site specific permit and does not promote the "easy-to-use" hybrid/non-site specific permits. It is our recommendation to keep the Molybdenum ceiling concentration value at least equivalent to the Federal EPA regulatory limit of 75 mg/kg. By doing this, it will allow for further study into the Molybdenum debate and will eliminate any confusion between the Federal EPA and IDEM Ceiling Limits. If the department was concerned that the Federal EPA may impose limits in the future a clause could be added to include that. Another concern is that if the State of Indiana does impose a limit that does not match the future Federal limits, then there would be two sets of rules to follow. With the effort the department is making in trying to match the State rules with the Federal rules, in the area of Frequency of Monitoring, it seems kind of reverse to make another rule that more than likely won't match the Federal rules. Since we are all subject to following the Federal rules anyway it would appear less burdensome to preliminarily impose more restrictions on our facility in Indiana, only when the rest of the states may or may not have a limit imposed at all. We strongly urge the department to give this issue some very serious thought as to the possibility of removing this from the proposed amendments. (HUN)

Response: The molybdenum requirements in Tables 2 and 4 have been deleted. The molybdenum requirement in Table 3 has been raised from 40 milligrams per kilogram to 75 milligrams per kilogram. It is also being added under the management practices that it is prohibited to apply biosolid or industrial waste product that contains more than 40 milligrams per kilogram of molybdenum to pasture. The proposed limits for molybdenum are based on a study, “A Modified Risk Assessment to Establish Molybdenum Standards for Land Application of Biosolids” by O’Connor, Brobst, Chaney, Kincaid, McDowell, Pierzynski, Rubin and Riper. However, rather than the more stringent limits first proposed in the rule, the limits now proposed are based on the concerns directly reflected in the study. The rule now restricts biosolid and industrial waste products containing higher levels of molybdenum on pasture and for marketing and distribution when applied to pasture.

Comment: 327 IAC 6.1-4-9 Pollutant Limits Sec. 9. (c) The Molybdenum limit proposed in Table 3 at 40 mg/'kg is a concern. It is not uncommon for our facility to have numbers near 40 mg/kg. In the past, we had numbers around 60 mg/kg. To address this issue, we sent letters to potential users, asking that they discontinue their Molybdenum use, and educated them on the fact that there are alternative chemicals to use that contain no Molybdenum. This effort proved to be effective by dropping our Molybdenum levels, now ranging from 20 - 38 mg/kg.

Lafayette aggressively responded to rising Molybdenum levels achieving a significant reduction. The levels have remained in an acceptable range. If we are forced to meet the 40 mg/kg we cannot do so without modifications to our Local Sewer Use Ordinance, Industrial User Discharge permits, and increased collection system monitoring. These next steps would allow the City to enforce Molybdenum discharges, but would all be very cost and time intensive.

If Table 3 limit for Molybdenum is set at 40 mg/kg, it is very likely that we would violate, thus losing our hybrid permit. This scenario could be detrimental to the success of our biosolids program.

I believe the City has proactively taken steps to achieve a cleaner biosolid product. Lowering the limit of Molybdenum to the proposed level would only produce significant costs and effort put forth by municipalities with little benefit gain in biosolids quality. (LAF)

Response: The molybdenum requirements in Tables 2 and 4 have been deleted. The molybdenum requirement in Table 3 has been raised from 40 milligrams per kilogram to 75 milligrams per kilogram. It is also being

added under the management practices that it is prohibited to apply biosolid or industrial waste product that contains more than 40 milligrams per kilogram of molybdenum to pasture. The proposed limits for molybdenum are based on a study, "A Modified Risk Assessment to Establish Molybdenum Standards for Land Application of Biosolids" by O'Connor, Brobst, Chaney, Kincaid, McDowell, Pierzynski, Rubin and Riper. However, rather than the more stringent limits first proposed in the rule, the limits now proposed are based on the concerns directly reflected in the study. The rule now restricts biosolid and industrial waste products containing higher levels of molybdenum on pasture and for marketing and distribution when applied to pasture.

Comment: 327 IAC 6.1-4-6 Sec. 6.(g)(3) Clarifying this section was needed; however, I think that setting the sampling area to every 20 acres is excessive. Currently Lafayette uses a 25-acre set point. I believe this has become a standard throughout the industry. The majority of our acreage has remained in our program, with established maps and set 25 acre grids. By switching to 20 acres, there will be a cost issue for little benefit gain. I am supportive of specifying an amount, but would propose leaving that amount at 25 acres. (LAF)

Response: IDEM agrees with your arguments and has changed the requirement from twenty (20) acres to twenty-five (25).

Comment: Sec. 22, 327 IAC 6.1-4-9 The pollutant limits have been revised to include limits for molybdenum in tables 2, 3 and 4. Federal regulations do not currently contain these limits and we are unaware of any guidance suggesting that molybdenum limits be set at these concentrations. Recent monitoring of our biosolids indicates that it is likely that our municipal treatment facility will be unable to meet these concentrations. Adoption of the proposed limits for molybdenum will severely restrict land application of biosolids and will force us to landfill significant quantities of biosolids. We suggest that the State postpone the implementation of molybdenum limits until the Federal 503 regulations adopt them. (MIU)

Response: The molybdenum requirements in Tables 2 and 4 have been deleted. The molybdenum requirement in Table 3 has been raised from 40 milligrams per kilogram to 75 milligrams per kilogram. It is also being added under the management practices that it is prohibited to apply biosolid or industrial waste product that contains more than 40 milligrams per kilogram of molybdenum to pasture. The proposed limits for molybdenum are based on a study, "A Modified Risk Assessment to Establish Molybdenum Standards for Land Application of Biosolids" by O'Connor, Brobst, Chaney, Kincaid, McDowell, Pierzynski, Rubin and Riper. However, rather than the more stringent limits first proposed in the rule, the limits now proposed are based on the concerns directly reflected in the study. The rule now restricts biosolid and industrial waste products containing higher levels of molybdenum on pasture and for marketing and distribution when applied to pasture.

Comment: Sec. 35, 327 IAC 6.1-4-16 section 16 (1) allows for nutrient data from a representative sample, collected prior to land application, to be used for reporting purposes. This is a welcome modification to the rule, as it will allow for better management of applications at agronomic rates. However, the definition of "fixed volume" is very strict and allows little flexibility. In many municipal treatment facilities it is likely that biosolids generation would continue after this sampling. It is unlikely that the volume of this material would be significant or change in characteristics from the "fixed" stock piled volume. We suggest that some flexibility be given to allow for small additions to a fixed volume stock pile if the biosolids are being generated from a process that has shown to produce concentrations that are relatively consistent. (MIU)

Response: IDEM disagrees. The nutrients are typically the most limiting factor and must be measured as accurately as possible. IDEM does not believe that nutrients can always be accurately measured when additional material is added to a volume after the biosolid has been sampled.

Comment: Sec. 41, 327 IAC 6.1-5-4 sec. 4 (a)(5) Requires that the name and address of recipients of one (1) metric ton or more of distributed or marketed biosolids be included in annual reports. This volume of material is insignificant, amounting to less than one cubic yard. It is questionable the value that is gained by tracking such information. We request that consideration be given to increasing the reportable limit to 10 metric tons. In addition, we request that consideration be given to exempting municipal biosolids that can show 2 years of consistent pollutant concentrations. (MIU).

Response: IDEM believes that it is valuable to know the name and address of anyone who has taken more than one (1) ton of biosolid in the event that an unmonitored contaminate of concern is found from a facility that

markets and distributes. However, IDEM is eliminating the requirement to report the names and addresses to the department. Permittees will be required to retain this information for five (5) years.

Comment: 327 IAC 6.1-4-9: Pollutant Limits
It seems premature to create molybdenum limits in Tables 2, 3, & 4 since EPA has not promulgated any rules on molybdenum. If this change were adopted and EPA does issue new rules, that might necessitate another round of rulemaking to conform to EPA's changes. At this point, there doesn't seem to be any compelling reason why Indiana needs to go beyond current EPA rules. (MU)

Response: The molybdenum requirements in Tables 2 and 4 have been deleted. The molybdenum requirement in Table 3 has been raised from 40 milligrams per kilogram to 75 milligrams per kilogram. It is also being added under the management practices that it is prohibited to apply biosolid or industrial waste product that contains more than 40 milligrams per kilogram of molybdenum to pasture. The proposed limits for molybdenum are based on a study, "A Modified Risk Assessment to Establish Molybdenum Standards for Land Application of Biosolids" by O'Connor, Brobst, Chaney, Kincaid, McDowell, Pierzynski, Rubin and Riper. However, rather than the more stringent limits first proposed in the rule, the limits now proposed are based on the concerns directly reflected in the study. The rule now restricts biosolid and industrial waste products containing higher levels of molybdenum on pasture and for marketing and distribution when applied to pasture.

Comment: 327 IAC 6.1-4-16: Monitoring and Analysis
We agree with the change in Table 6, Frequency of Monitoring. The monitoring required by the current rule seemed excessive. There are additional costs involved for lab analysis and few benefits. In 2001, we stopped applying biosolids in early November to avoid exceeding 1000 dry tons and placing us in the monthly monitoring level. The new levels suggested are reasonable and cost effective. (MU)

Response: IDEM concurs.

Comment: 327 IAC 6.1-6-2: Agricultural Lime
We would like IDEM to consider reducing the frequency of analysis based on historical data. We have a Water treatment plant using lime softening for ground water. Our lime contains exceedingly low levels of pollutants listed in Table 1 of 6.1-4-9. It seems excessive and not beneficial to the environment to be testing our lime as frequently as we test our biosolids. (MU)

Response: IDEM agrees and changed the requirement for frequency of testing to reflect the requirement for testing frequency in Table 6 under 327 IAC 6.1-4-16(f).

Comment: One improvement affecting Milorganite® marketing and distribution jumps out as precedent setting. Given past our tortured experience, decidedly enlightened. 327 IAC 6.1-4-9(c) establishes 40 mg/kg as the no adverse effect concentration of molybdenum (Mo) for safe unrestricted Milorganite® use. No more false warning about Milorganite® being "toxic to cows." The Milwaukee Metropolitan Sewerage District congratulates you for taking action on the best science about the Molybdenosis pathway. Newtonians (scholars not adrift with uncertainty about pretend risks) suggest that if EQ biosolids agricultural use is the exposure pathway of concern to open pasture grazing cows, then the risk of a copper deficiency is effectively eradicated with a monthly average of 40 mg/kg Mo, even if the neglected cows are deprived of mineral supplements. Thank you for being the first state to "cure" the problem. (Attached award) (MMSD)

Response: The molybdenum requirements in Tables 2 and 4 have been deleted. The molybdenum requirement in Table 3 has been raised from 40 milligrams per kilogram to 75 milligrams per kilogram. It is also being added under the management practices that it is prohibited to apply biosolid or industrial waste product that contains more than 40 milligrams per kilogram of molybdenum to pasture. The proposed limits for molybdenum are based on a study, "A Modified Risk Assessment to Establish Molybdenum Standards for Land Application of Biosolids" by O'Connor, Brobst, Chaney, Kincaid, McDowell, Pierzynski, Rubin and Riper. However, rather than the more stringent limits first proposed in the rule, the limits now proposed are based on the concerns directly reflected in the study. The rule now restricts biosolid and industrial waste products containing higher levels of molybdenum on pasture and for marketing and distribution when applied to pasture.